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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/938,672	08/27/2001	John Moore	M4065.0475/P475	2511

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EXAMINER	
PIZARRO CRESPO, MARCOS D	
ART UNIT	PAPER NUMBER
2814	

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10

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/938,672

Applicant(s)

MOORE, JOHN

Examiner

Marcos D. Pizarro-Crespo

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 June 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-46 is/are pending in the application.
- 4a) Of the above claim(s) 1-16 and 31-46 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-31 are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 November 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.

- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Application/Control Number: 09/938,672 (Non-Final Rejection)
Art Unit: 2814

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Attorney's Docket Number: M4065.0475/P475

Filing Date: 8/27/2001

Claimed Foreign Priority Date: none

Applicant(s): Moore

Examiner: Marcos D. Pizarro-Crespo

DETAILED ACTION

This Office action responds to the election (paper no. 9) filed on 6/11/2002.

Election/Restrictions

1. Applicant's election without traverse of claims 17-30 in paper no. 9 is acknowledged.
2. Claims 1-16 and 31-46 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Drawings

3. The drawings are objected to under 37 CFR 1.83(a) because they fail to show the field isolation areas **100** described in the specification (pp.4/II.3). Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d).
4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters **128** (spec./pp.5/II.4) and **129** (fig. 6) have both been used to designate the same chalcogenide glass layer.

5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned on page 5 line 1 of the specification: **114**.

6. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

7. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 17-30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

10. Lines 3-4 of claim 17 recite the limitation "said fast ion conductor material". There is insufficient antecedent basis for this limitation in the claim.

11. Lines 6-7 of claims 17 recites the limitation "said fast ion conductor material". There is insufficient antecedent basis for this limitation in the claim.

12. Line 3 of claim 23 recites the limitation "a cathode of said second memory cell". It is not clear whether this cathode is the same or different from the cathode recited in claim 17.

13. Line 3 of claim 23 recites the limitation "said conductive plug". There is insufficient antecedent basis for this limitation in the claim.

14. Line 2 of claim 24 recites the limitation "said first access transistor". There is insufficient antecedent basis for this limitation in the claim.

15. Line 1 of claim 25 recites the limitation "A method as in claim 23 facing a word line conductor". It is not clear how a method can be facing a conductor.

16. Line 2 of claim 25 recites the limitation "said first access transistor". There is insufficient antecedent basis for this limitation in the claim.

17. Line 2 of claim 26 recites the limitation "said upper cell". There is insufficient antecedent basis for this limitation in the claim.

18. Line 1 of claim 27 recites the limitation "said upper and lower cells". There is insufficient antecedent basis for this limitation in the claim.

19. Line 2 of claim 27 recites the limitation "said first...access transistors". There is insufficient antecedent basis for this limitation in the claim.

20. Line 1 of claim 28 recites the limitation "said upper and lower cells". There is insufficient antecedent basis for this limitation in the claim.

21. Line 2 of claim 28 recites the limitation "said first and second access transistors". There is insufficient antecedent basis for this limitation in the claim.

22. Line 2 of claim 29 recites the limitation "said first...access transistors". There is insufficient antecedent basis for this limitation in the claim.

23. Line 3 of claim 29 recites the limitation "said upper and lower memory cells". There is insufficient antecedent basis for this limitation in the claim.

24. Line 2 of claim 30 recites the limitation "said first and second access transistors". There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

25. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

26. Claims 17-20 and 23-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katori (US 6426891) in view of Ovshinsky (US 5912839).

27. Katori shows (see, e.g., fig. 10) most aspects of the instant invention including a method of fabricating a memory device comprising:

- forming a first memory cell to include a chalcogenide glass material **4** and cathode and anode electrodes **3, 5** spaced apart and in contact with the glass material **4**
- forming a second memory cell to include a chalcogenide glass material **4** and cathode and anode electrodes **3, 5** spaced apart and in contact with the glass material
- forming a common anode **12^f** for both of the first and second memory cells

Katori, however, fails to describe the chalcogenide glass material as containing a fast ion conductor. Nonetheless, Katori teaches (col.4/ll.19-20) that the chalcogenide material is used as a phase-change material. Ovshinsky (col.17/ll.60-62), on the other

hand, teaches that phase-change materials preferably include at least one chalcogen material that may include at least one transition metal.

It would have been obvious at the time of the invention to one of ordinary skill in the art to include a fast ion conductor into Katori's chalcogenide phase-change material, as suggested by Ovshinsky, since the phase-change materials preferably include at least one chalcogen material that may include at least one transition metal, *i.e.*, a fast ion conductor.

28. Regarding claim 18, Katori shows (see, *e.g.*, fig. 10) that the method further comprises forming the first memory cell stacked on the second memory cell.

29. Regarding claim 19, Katori shows (see, *e.g.*, fig. 10) that the method further comprises forming each of the first and second memory cells of a layered structure that includes a cathode layer **3**, a chalcogenide glass material layer **4**, and an anode layer **5**. Ovshinsky (col.17/ll.60-62) shows that the glass material layer is preferably a fast ion conductor material layer.

30. Regarding claim 20, Ovshinsky (col.16/ll.4) shows that the cathode may comprise an aluminum layer.

31. Regarding claim 23, Katori further shows (see, *e.g.*, fig. 10) the method comprising a step of forming the stacked first and second memory cells over a conductive plug **8, 9** such that the cathode **5** of the second memory cell is electrically coupled with the conductive plug **8, 9**.

32. Regarding claim 24, Ovshinsky shows (see, *e.g.*, fig. 6) a column line conductor **10** electrically coupled to a second active region of a first access transistor **22**.

33. Regarding claim 25, Ovshinsky shows (see, e.g., fig. 6) a word line conductor **26** that is electrically coupled to the gate **24** of a first access transistor **22**.

34. Regarding claim 26, Ovshinsky shows (see, e.g., figs. 4 and 6) that a second access transistor **22** may be formed and coupled to the second memory cell of Katori.

35. Regarding claim 27, Ovshinsky shows (see, e.g., figs. 4 and 7) that the first and second memory cells may be coupled to different column lines **18 28** by first and second access transistors **22**.

36. Regarding claim 28, Ovshinsky shows (see, e.g., figs. 4 and 6) that the first and second memory cells may be connected to the same column line **10** by a first **22** and a second **22** access transistor.

37. Claims 29-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katori, in view of Ovshinsky, as applied to claim 17 above, and further in view of Zahorik (US 6015977).

38. Regarding claims 29 and 30, Katori/Ovshinsky (see, e.g., fig. 10 of Ovshinsky) shows a circuit **52** for operating the first and second access transistors **22**.

In reference to the claim language referring to the function of the circuit, intended use and other types of functional language must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. *In re Casey*, 152 USPQ 235 (CCPA 1967); *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

Moreover, operating the transistors, either separately or together, to access the memory cells is precisely the role of Ovshinsky's circuit. See, for example, Zahorik, who illustrates in figure 2 a similar schematic representation to that in figure 10 of Ovshinsky. Like Ovshinsky, Zahorik shows in figure 2 an integrated memory matrix **16** in electrical communication with an integrated circuit **24**. Zahorik (col.4/ll.55-59) further teaches that this control circuitry **24** accesses the memory cells **18** in the memory array **16** by selecting appropriate row and column coordinates to activate a corresponding access device.

between the claimed + the PA process

Consequently, no manipulative differences ^{between the claimed + the PA process} appear to result from specifying the role of the circuit of Katori/Ovshinsky and therefore would have been obvious.

Allowable Subject Matter

39. Claims 21 and 22 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

40. Papers related to this application may be submitted directly to Art Unit 2814 by facsimile transmission. Papers should be faxed to Art Unit 2814 via the Art Unit 2814 Fax Center located in Crystal Plaza 4, room 3C23. The faxing of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (15 November 1989). The Art Unit 2814 Fax Center number is **(703) 308-7722** or **-7724**. The Art Unit 2814 Fax Center is to be used only for papers related to Art Unit 2814 applications.

41. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Marcos D. Pizarro-Crespo** at **(703) 308-6558** and between the hours of 9:00 AM to 7:30 PM (Eastern Standard Time) Monday through Thursday or by e-mail via Marcos.Pizarro@uspto.gov. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri, can be reached on (703) 306-2794.

42. Any inquiry of a general nature or relating to the status of this application should be directed to the **Group 2800 Receptionist** at **(703) 308-0956**.

43. The following list is the Examiner's field of search for the present Office Action:

Field of Search	Date
U.S. Class / Subclass(es): 438/95,98,102,103; 257/2-5	8/20/2002
Other Documentation: PLUS Analysis	8/20/2002
Electronic Database(s): EAST (USPAT, EPO, JPO)	8/20/2002



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